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Libraries regularly collect statistics in order to understand and communicate the value of products and services to stakeholders. These statistics, also known as metrics, can incur quantitative or qualitative data and can fall into one of five categories: input measures, process measures, output measures, outcome measures, or impact measures. Outputs, such as the number of books circulated or attendees to a webinar, are the most common, but outcomes, such as how a class helped streamline a patron's workflow, are the most desired. The monthly statistics collected in a government special library were gathered and classified according to their conformity to one of these types of performance measures. The library collected the most output metrics, followed by inputs, then outcomes. While metric diversity is beneficial, suggestions for how to improve the evaluation procedures and gain more outcomes and impacts are discussed.

Headings:

Special libraries -- Evaluation

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Library statistics

ASSESSING THE STATE OF METRICS DEMONSTRATING VALUE IN A
GOVERNMENT SPECIAL LIBRARY

by
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Table of Contents

Introduction.....	2
Literature Review.....	7
Methods.....	16
Results.....	20
Discussion	23
Implications and Limitations	26
Conclusion	29

Introduction

Many years ago, a scientist would enter the special library of a research organization and ask a specific question, such as “what is the atomic mass of element X?” The librarian would walk over to the reference section, pick up the “Big Book of Elements,” and locate a number for the researcher. This would be one reference question tally mark on the statistics clipboard (Orr, 1973). These days, the same scientist would send a chat query, asking about all of the methodologies currently used in research studies involving factor Y and factor Z published in the last 10 years. The librarian will spend multiple days searching databases, compiling articles on the topic, and formatting a bibliography for the patron. This might also be recorded as one reference question (Oberg, 2011). Things have changed in the way reference interactions and other library services are conducted. Many patrons are capable of finding their own resources online to accommodate research needs for ready reference questions. Libraries are finding new ways to remain valuable to patrons by updating services to incorporate emerging technologies and working on the more in-depth inquiries. An unchanging aspect is the need to record statistics documenting interactions with patrons, and the need to provide those statistics to stakeholders and decision makers.

While some metrics demonstrating value are necessary in all types of libraries, certain measurements may not accurately depict activities occurring in a special library. For particular special libraries, the accentuated scrutiny and pressure associated with tightened budgets increases the need for accurate recordkeeping (Murray, 2013). In

order to ensure the best picture of value is being displayed, evolving activities and needs must be reflected in modern metrics tailored to fit a special library's offering.

The study of library value is not new; it has been constantly revisited through the years.

The first challenge is how to define value, and another obstacle is how to measure it.

Generally, value refers to the potential or perceived benefit, importance, or preciousness of something (Poll, 2003, p. 5). But in this case, the true meaning of value should be embedded within the context of the library under analysis, where the defining characteristics are a reflection of the institution itself (Town, 2011). In order to decipher what determines value for an institution, the organization must be dissected.

The Environmental Protection Agency's Research Triangle Park Library is a federally funded special library serving scientists, researchers, and other employees both locally on campus and virtually. The library's physical collection is composed largely of older print journals and a small monograph assemblage focused primarily on environmental science concepts. The library is also a repository for air-related documents published by the EPA. The most heavily used resources are the electronic journal subscriptions. Many patron interactions involve supplying users with PDF's from the subscriptions or through interlibrary loan. The EPA-RTP Library also staffs a reference desk and supports researchers with virtual and face-to-face reference services, instructional classes, and literature searches. Additionally, librarians field phone calls and emails from the public during operating hours.

Special libraries embedded within the organization, like the EPA-RTP Library, add immense value to the parent organization. One type of convenience is created by centralizing the acquisition management of shared resources across all departments.

Other examples include how libraries facilitate value-added activities to resources, save the organization space and enormous amounts of time, and provide exceptional customer service (Baldwin, 2002). Instead of having goals concerning education, special libraries are valued for their direct focus on assisting the patron and organization through the delivery of services and products (Murray, 2013).

Each library participates in value-added activities that can be evaluated for their contributions to both users and the parent organization and might not be best communicated using counts compiled at the end of the month. In the EPA-RTP Library, activities contributing to value and patron interactions are multidimensional. Scientists are busy and rely on the library to fulfill time-consuming services such as document delivery and literature searches. Regular metrics like door totals or numbers of books circulated are not the most important exchanges and are therefore not as relevant when investigating the library's worth. What might be more useful are stories of user experiences translating the time or financial savings services provided for patrons and how users were able to expend effort on matters more directly related to their work (Dalton, 2012; Oakleaf, 2010; Scotti, 2010).

Like other information organizations, the EPA-RTP Library demonstrates value using statistics in relation to resources and patron interactions, as well as those from an internal survey. In general, these interactions are recorded as counts. The size of the collection and staff are examples of input counts often described in libraries and are kept in the EPA-RTP Library (Sinnot, 2011). Historically, these were combined with the number of books circulated, number of articles requested externally through interlibrary loan, as well as the door count and other easily quantified output measures. But if

special library activities such as quick and in-depth reference transactions, literature searches completed, and instructional classes taught are displayed solely as quantities, an important part of the story may be missed. These numerical evaluations will not have the same effect on managers' recognition of value as would other more explanatory methods (Haswell, 2012).

The metrics typically called for in this type of assessment have experienced changes as the field has seen a centering on user outcomes, an influx of available online resources, and increasingly stressed budgets (Hiller, 2012; Murray, 2013). Just as there has historically been a shift to examining qualitative user outcomes in libraries, there has been a shift toward deriving qualitative measures to supplement quantitative metrics (Ard, 2012; Bowlby, 2012). Matthews (2002) addresses evaluating deeper processes by assessing performance outcomes and subsequent impacts on the organization. Performance outcomes and impacts refer to the effects a library has on its users and the organization through its services (Hiller, 2012). Even so, stakeholders rely on concise quantitative reports in order to make important organizational decisions. The challenge then is to collect metrics accurately demonstrating the unique services and valuable work performed while meeting the needs of managers (Ard, 2012). Balancing this combination is essential for a library's message of value to be accurately and effectively communicated.

Activities are ever-evolving as the EPA-RTP Library addresses new initiatives and patrons are introduced to new service technologies. However, the metrics presented to managers responsible for funding decisions are largely unchanged over much of this evolution. In a classic *Library Journal* article from 1906, James Thayer Gerould noted

progressive librarians re-examining operational value methods need to ask questions such as “is this method the best?” and if the organization compares well to others who are similar. The EPA-RTP Library is in need of such an inquiry. A qualitative audit of the library’s evaluation procedures will allow for an in-depth examination of the current metrics’ ability to convey the library’s value to managers. This case study investigates the efficiency of evaluation design using the following research questions:

- What does the literature suggest as being important for value measurement in special libraries?
- What are the current statistics collected at the EPA-RTP Library?
- How are these metrics being compiled for managers?
- How does this process compare to the literature and pertinent standards?

Answering these inquiries will construct a picture for how the library is assessing the value of its services. Outcomes will demonstrate what the library is doing correctly and where gaps may need to be addressed. The end product will result in a model reflecting the metrics used at the EPA-RTP Library but which may be applicable to other special libraries with similar missions and services.

Literature Review

One way to assess a library's transmission of value is by identifying the measurements and metrics used to examine its resources, services, and influence. These metrics are derived from the value-added activities occurring in libraries and are used to communicate accountability (Dugan, Hernon, & Nitecki 2009). They can be quantitative, qualitative, or a combination of methods (Tenopir, 2013), and their format can be an influential factor when deciding which metric is better reflective of the information need. Each statistic and measure has its pros and cons, which is why a combination of both quantitative and qualitative metrics best communicates the library's message of value (Hales, 2012).

A collection of statistics transforms into informative library metrics when there is an established context and relevance to the stakeholder's information need. Metrics in combination with supportive data visualizations and explanatory narratives construct a picture capable of translating a message readers can apply to make institutional decisions. The challenge lies in constructing a method that speaks to the services enacted and worth added to the organization as well as the needs of the various people who will be using the information (Ard, 2012). It can be tempting to repeatedly recycle the previous year's metrics, but this is dangerous, because measurements might not remain as meaningful from one year to the next (Schachter, 2012). Libraries sometimes struggle with juggling concepts and options and can turn to the literature for guidance. In order to understand the basis of metrics contributing to value, it is necessary to first understand

the underlying theoretical concepts supporting the various methods libraries can pursue. This literature review will examine relevant information and library science literature on metrics indicating value and those pertaining to special libraries.

Many organizations rely on standardized methods for guidance in evaluation processes leading to decisions concerning operations and funding. The standards involving metrics directly applicable to special libraries vary (Murray, 2013; Dash & Padi, 2010), and in the case of the EPA-RTP Library, are not incorporated into the development of these processes and procedures. The variance and associated criticisms of qualitative standards result in libraries reaching beyond into the scholarly literature and writings of accomplished field theorists and practitioners (Matthews, 2002). From there, administrators investigating library value for their institution can triangulate the standards, theoretical frameworks, and practice-based case studies to fit their own situation.

Standards are intended to assist in not just maintaining quality but also ensuring processes are evolving with changing times (Dash & Padi, 2010). Due to the standards' specificity, in many cases the individual guidelines can only be applied within their originating domains and library types. The Association of Research Libraries (ARL), Association of College and Research Libraries (ACRL), International Federation of Library Associations and Institutions (IFLA), and International Standards Organization (ISO) have all contributed suggestions for effective library performance indicators (Brophy, 2002). Decades ago, it was recognized how standards were largely focused on inputs and could benefit from expanding into the perception of the user (Heath, 2011; Matthews, 2002). Newer standards have attempted to do this by proposing indicators

and performance measurements for academic, public, school, and certain special libraries. Matthews (2002) advocates for the focus to move from controversial projected standards for inputs and outputs to more meaningful performance outcome measurements.

Frameworks for organizational assessment can help libraries measure effectiveness through different perspectives. They provide a means through which complex relationships between drivers and their outcomes can be comprehended (Matthews, 2011). Many frameworks concerning performance measurement are based on business concepts because of the need to find new ways to streamline organizational operations and efficiency. Businesses in all domains are becoming acquainted with the culture of “doing more with less” and providing measures of how they are doing so using value indicators. By assessing organizational effectiveness through the lens of certain frameworks, libraries have the opportunity to connect how resources are being used to directly meet goals and demonstrate this performance to stakeholders (Matthews, 2011). Metric method construction provides support for continuation of activities in an environment where the special library is contained inside a business with a bottom line (Oakleaf, 2010). Useful frameworks assist libraries in concentrating on a few best-fit, applicable key elements compared to all of those that may be appropriate for their situation (Matthews, 2011). Literature proposing frameworks allows interested organizations to adopt and adapt the structure to fit their needs. From this situation is where practice-based literature is developed.

Case studies of practice in the field are often sought when librarians want to see how other organizations managed a certain change or undertaking. They are important

because individual experiences have the opportunity to fill a gap standards often leave (Dash & Padhi, 2010). Information professionals encounter similar challenges and thus should be able to look to colleagues and other organizations for solutions (Murray, 2013). Action research and evidence-based practice literature are useful for practitioners contemplating an institutional change (Oakleaf, 2010). By analyzing similar organizations, librarians can hypothesize how such an activity would fare in their own environment. This study applies that idea to the EPA-RTP Library.

When addressing metrics, it is key to be able map each metric's contribution to the library in context. The literature describes measures capable of tracing metrics back to categories of library productivity. The works of Joseph R. Matthews (2002, 2015) dedicate significant study to determining library value and its place in special libraries. His classification scheme builds from Richard Orr's (1973) classic model for components of evaluation in libraries. Where Orr proposes resources, capability, outputs, outcomes, and impacts as the important pieces of the library evaluation process, Matthews (2015) proposes input measures, process measures, output measures, outcome measures, and impact measures as the corresponding indicators for these components.

Input measures are composed of the resources invested in or assigned to the library contributing to the products and services created (Hiller, 2012). They are some of the easiest counts to record in libraries and have historically been used most often. Generally, input measures are divided into the broad categories of finances (budget), technology, collections, personnel, and facility (Matthews, 2011). This includes things such as number of e-journals, available public computers, and size of full-time and part-

time staff. Input measures are important when benchmarking and making side-by-side comparisons to other similar institutions (Dudden, 2008).

Once inputs are implemented in libraries they must be translated into services patrons can utilize. The measure of this activity is referred to as a process measure, or sometimes productivity measure, because it directly indicates the transformation step (Matthews, 2011). It is reflected during analyses revealing a quantification of the time or money required to produce services using the institution's resources. Often, these measures generate ideas of efficiency (Stevens, 2009). Process measures can also be used in comparisons with peer libraries (Matthews, 2011).

Inputs and their processes facilitate the production of services and resources in the library called outputs (Hiller, 2012). Output measures are completed in order to help determine the level to which users are participating in services offered (Matthews, 2011). Examples include volumes of activities that can be quantitatively measured, such as circulation statistics, door counts, class attendance, and reference questions answered. Again, these measurements can be used when comparing a particular library to others of similar makeup. They convey the message that something is being accomplished within the organization and can even infer emerging trends (Dudden, 2008). However, output measures involving use are often inadequately associated with being pure value measures because they do not fully convey the "goodness" of the activities or the effect library services are having on users (Oakleaf, 2010).

The measures discussed thus far have emphasized internal library processes. As mentioned, they can be useful for examining management of resources and services, and are classic statistics recorded in libraries of all types. But despite the simplicity of input

measures, process measures, and output measures, their focus lies away from the actual user. Because of this, an important opportunity for progression through processes (such as innovation or customer service) might be lost if the focus is narrowed to just inputs and outputs (Brophy, 2002). Inputs and outputs are traditional internal measures that no longer resonate strongly with stakeholders. The information they provide from an assessment point of view may not contribute to the value of the greater organization as understood by those making its decisions (Oakleaf, 2010). A brief investigation into the history of metrics and library evaluation reveals an evolution in the types of metrics collected and their corresponding focus. As a transition to user-centered evaluation has emerged, libraries are advocating the use of outcomes and impacts as better communicators of library value (Matthews, 2015).

Contrasting from the previous measures discussed, outcome measures concentrate more on the library patrons than internal activities. This measurement focuses on the effects a library produces on and surrounding its customers (Matthews, 2002). Outcomes are some of the most difficult aspects to measure as they can happen both directly and indirectly, planned and unplanned (Matthews, 2011). Matthews (2015) suggests some indicators of outcome measures reflected in the individual including changes in attitudes, values, skillsets, understanding, behavior, and overall satisfaction or enjoyment. Outcome measures can be quantified when the results of the previously mentioned measurements (input, process, and output) are compiled and become important when examining program planning and evaluation (Rubin, 2006). This type of measurement is often discussed in the context of academic libraries where user education is part of the mission.

Impact measures stem from outcome measures, but occur within a community of users or the greater organization. While some literature uses the terms “outcomes” and “impacts” interchangeably, it is important to make the distinction in this context where value will be addressed for the individual as well as for the organization as a whole. The body of literature distinguishing the two types of measures has been developing in the last decade. Matthews (2015) proposes impact can be viewed as the cumulative effects of outcomes over the long term. Furthermore, impacts can be divided based on sector. Learning impacts, economic impacts, social impacts, and individual impacts are four perspectives through which library impacts can occur (Matthews, 2015).

It is important to connect library assessment procedures to the organizational mission (Hales, 2012; Albert, 2014; Tenopir, 2013; Bowlby, 2012; Gann & Pratt, 2013; White, 2008; Oakleaf, 2010). Special libraries’ missions center around providing vital services to a specific group or type of users. The mission should be prioritized in the development of efficient outcome and impact metrics, especially where a special library is within a greater organization. This concerns the mission of the special library, but may need to be expanded to encompass the parent organization’s mission and strategic goals (Dalton, 2012). The library being able to justify their contribution to the greater institution’s outcomes and impacts as defined by its fundamental goals would be the ultimate assessment achievement. Measuring can become a dilemma because customer populations in many of these special libraries are unique and relationships are often very formal. For example, in the EPA-RTP Library, the patron’s time is valuable and it is not desirable to cause distractions with interviews, focus groups, or questionnaires. In these cases, the library must rely on minimal feedback to gauge outcomes and impacts on

patrons. It is often the case where outcome measures are better determined by external consultants or large data collection efforts and thus may not be reported consistently Matthews (2002). To compromise, the mission may be used as the basis for a particular model of metric assessment or as an underpinning for aligning metrics and their purpose (Town, 2011).

Many challenges are associated with measuring outcomes and impacts. First, identifying these metrics is not enough to speak to their value. They must be measured and presented appropriately within the context of the organization, and this can sometimes only be done over a long period of study (Matthews, 2015). Another challenge is the inability to trace these effects directly to library services (Poll & Payne, 2006). Methods capable of determining impacts can be very invasive or time consuming. Some case studies have developed instruments to make abstract effects more tangible or advocate the use of surrogate measures (Botha, Erasmus, & Van Deventer, 2009; Poll & Payne, 2006). But for now, measuring intangible impact is still in its infancy (Marshall, 2000).

Value is abstract, and different methods have been created and triangulated to establish sufficient concrete measures. Matthews presents the framework for this study, Orr's (1973) model, which claims inputs, outputs, processes, outcomes, and impacts are performance measurements which can be used to assess library value (Matthews, 2011). In order to combat the difficulties of gathering certain measures of effectivity, libraries can use representative statistics that help translate activities into indicators of value, often referred to as surrogate measures. Surrogates are needed in particular for outcome and impact measures where the notion proposing effects on a patron or organization are

a direct result of library activities, not outside influences, must be defended (Poll, 2003). The challenge then becomes finding the strongest surrogates to answer these questions (Botha, Erasmus, & Van Deventer, 2009). However, Oakleaf (2010) describes how the potential correlations between data sources used as surrogates and institutional impacts are dependent on the current data collection procedures. Links between the two cannot be known if those possible areas of association are not explored.

Choosing the right method or combination of methods for special libraries can be challenging. No other library will have the same mission, patron base, or allocated resources. Even if a useful previous example could be found, there is a high chance it needs to be updated. Evaluating current methods against the standards, frameworks, and practices in the literature will help the EPA-RTP Library assess its use of metrics. Until there is a comprehensive established checklist or example to follow, the results of this study provide a model of assessment and an expanse of applicable examples through which to guide future directions.

Methods

This case study involved multiple steps in order to address each piece of the proposed research question. The metrics gathered in the EPA-RTP Library were analyzed through a form of mixed methods. Mixed methods research has been used increasingly in management research and possesses the ability to unveil concepts that may be missed in qualitative or quantitative research alone (Srnrka & Koeszegi, 2007). Following Zhang and Wildemuth's (2009) suggestion, this study implemented a directed content analysis approach where arising themes allowed for the perception of patterns in the data. This study sought to leverage the advantages of quantitative content analysis, but in the context of a more qualitative interpretation of the units being analyzed (Kohlbacher, 2006). The list of coding classifications was generated using categories outlined in the literature review. And finally, qualitative themes were used to turn data into numeric counts whose frequencies could be compared. As Tashakkori and Teddie (2003) describe, a "quantitizing" of qualitative data took place.

Sampling and Data Collection

To draw an accurate picture of the current state of metrics in the EPA-RTP Library, all statistical entries recorded in the library for the 2015-2016 fiscal year were gathered. Each department contributes its own statistics, which are collocated by the Library Director. Each statistic or question composed one unit of analysis, referred to throughout the remainder of this study as a metric.

Collecting metrics was not as simple as recording the numbers from each departmental clipboard. In some cases, the clipboard quantities were parts of an equation, whose total was submitted to the Director. For other departments, the statistics were gathered from database queries and printed to physical paper for the Director. This means the final numbers were often not direct transfers and a lot of effort went into producing the data for management. Additionally, 18 metrics were recorded physically and not passed onto management, but were instead retained for internal recordkeeping.

Coding Framework

The coding system was built on two schemes by defining 1) what type of measurement the metric represents and 2) the type of library service the metric supports. For the first measure, metrics were coded based on Matthews' (2002; 2015) model, acknowledging conformity to one of the mutually exclusive measurement types shown in Figure 1, as supported by the literature.

Measure	Definition
Input	quantifiable resources provided to the library
Process	activities that convert allocated resources into library products or services
Output	quantifiable volumes and counts of patrons' use of services and products
Outcome	the effects of the library's products and services on the individual
Impact	the effects of the library's products and services on the community or organization over time
Other	refers to measures which do not immediately involve the user but instead point to some internal or administrative purpose

Figure 1. Types of measurements adapted from Matthews 2002, 2015.

In Matthews' framework and those who research from it (Hiller, 2012; Dudden, 2008), specific examples of questions collected are provided with their corresponding category. These instances were used to code the metrics. Then, the data was classified according to the second measure defined by the mutually exclusive function or service type the metric addresses as listed in Figure 2 (Matthews, 2002).

Functional activity	Patron services and products	Overall library services
acquisitions	catalog	budget
cataloging	collection	clients
circulation	current awareness	facilities
serials (print and electronic)	document delivery	information technology
	electronic databases	staff
	interlibrary loan	
	literature searching	
	reference	

Figure 2. Activities and services in a special library organized by scope.

When coding according to the first measure, the selection was supported with the reference or references for which the coding decision for that instance was made. There was also a notation acknowledging the corresponding library service area representing the second measure in order to trace the metric to its purpose. Examining these categorical schemes provided the level of reliability necessary in this type of analysis where there is one coder. The measures were derived from categories developed through an established framework, helping contribute utmost validity (Srnlka & Koeszegi, 2007). The final matrix followed the format shown in Figure 3 with an example entry.

Unit of Analysis	Input	Process	Output	Outcome	Impact
Door count			Matthews, 2002 (Overall library services)		

Figure 3: Example coding matrix.

Analysis

A goal of this study was to confirm instances of the schematic categories. Therefore, manifest content analysis was the best method because each unit of analysis was being examined based on its conspicuous category and purpose (Downe-Wamboldt, 1992). Coding was completed using QSR Nvivo software. Computer-aided coding allows for a holistic process with greater flexibility (Schutt, 2011). Coding schemes can be revised concurrently and the program allows for comments to be linked to text segments. After the data was coded, it was then analyzed by counting frequencies within each schema. This quantification of nominal data allowed for the manifestation of trends within the first scheme and the opportunity to see where the EPA-RTP Library lies against the spectrum of best practices in library value metrics. In regard to the second scheme, it became visible as to which services and functions are being addressed and where gaps exist. From here, data patterns arose exhibiting what types of data are being recorded, the activity where the results provide support, and the extent of the library's coverage of important characteristics outlined by the body of literature.

Results

Analysis revealed the library is disproportionately recording output measures above all other types of metrics with 72 of the 127 statistics, or 57%, falling into this category. The next most prevalent category was input measures with 17% of the metrics. “Other reasons” comprised the next most significant category covering about 13% of the metrics. Outcome measures, the most sought after category, only produced 9% of the metrics. Process measures followed with a 4% makeup. No impact measures were observed in this data collection.

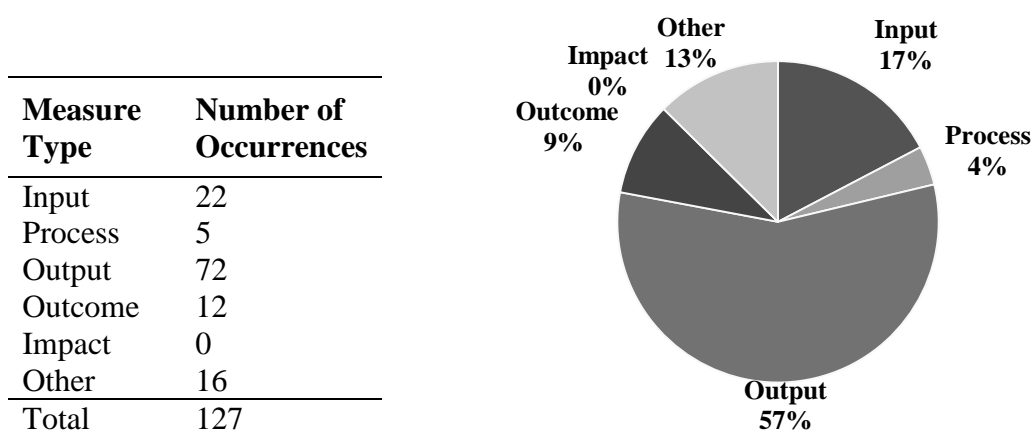


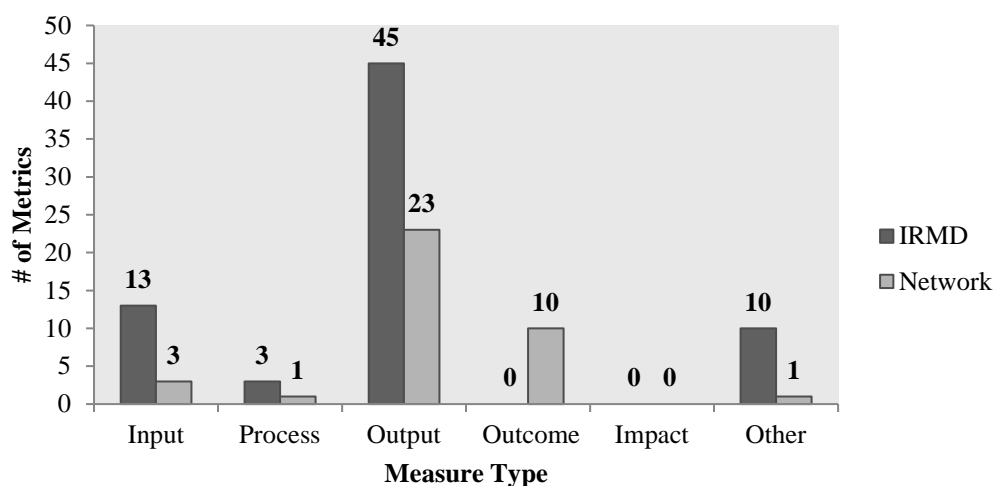
Figure 4. Overall occurrence of performance measures by type.

Of the outcome measures observed, the entirety involved metrics assessing patron services and products. 96% of the output measures were also this type of library function. Circulation statistics, which are considered output measures, are, according to

Matthews (2002), functional activities even though they are generally considered to be in the reference realm. None of the input measures or process measures were accounted for in the patron services and products category.

When examining the various departments in the library, reference, or sometimes referred to as “research,” had the most outcome measures. This same department also had the most output measures. Cataloging and acquisitions hosted the most input measures.

Between the two entities for which statistics are submitted, 56% of the statistics collected were for IRMD and 30% were for the EPA Library Network. Of those, output measures were the statistic type with the highest frequency, with both reports comprised of greater than 60% output measures. IRMD recorded both more input measures and more statistics falling into the other reasons category than the Network (Figure 5).



	Input	Process	Output	Outcome	Impact	Other	Total
IRMD	13	3	45	0	0	10	71
Network	3	1	23	10	0	1	38
Total	16	4	68	10	0	11	109

Figure 5. Total number of metrics according to entity.

Outcomes were only observed in the statistics delivered to the EPA Library Network. In other words, the IRMD statistics solely measured inputs, processes, and outputs and thus only recorded quantitative metrics (Figure 5). The reporting medium consisted of an Excel spreadsheet embedded with formulas leaving no field for elaboration or further explanation of numbers. Contrastingly, the Library Network statistics are submitted in a web form with clear designation of which statistics are counts, time in minutes, and open-ended responses.

Discussion

The EPA-RTP Library is overwhelmingly collecting outputs as performance measures. There are a few reasons speculated for this. For one, outputs are the easiest and least invasive user-related activities to monitor. They can be recorded throughout the month and put together at the end of the month with minimal burden. They can be gathered, for the most part, without the patron being disturbed or having to take time away from his or her work. It is not surprising that activities relating to the reference department log the most statistics and the greatest concentration of output measures. Libraries need to examine their performance metrics at interfaces with customers and the EPA-RTP Library has made significant efforts to quantify the extent of these activities.

What outputs are missing is the ability to demonstrate the value the library is creating for its patrons. The kind of information needed to measure outcomes is difficult to obtain from basic numerical counts. Luckily, the EPA Library Network's statistics allowed for information other than counts to be recorded. For many services, the time spent completing the request is documented. The time spent by the librarian can be translated into time saved by the researcher (Poll, 2003a; Poll 2003b). These metrics in relation to reference questions and literature searches made up a number of outcome metrics for the EPA-RTP Library. This is an example of using certain measures as surrogates for outcomes that may be too invasive to measure succinctly. One limitation of using surrogates in this manner is that the equivalency cannot be known. In

other words, there is no way to be sure if the time spent on the task by the librarian is the exact amount of time it would have taken the scientist, a little less, or a little more.

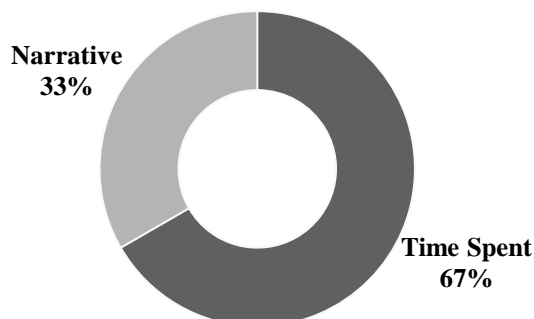


Figure 6. Outcomes separated by format.

The EPA Network Library statistics do provide opportunities for submission of outcomes that do not have to be determined by surrogates. The entries for research detail and monthly anecdotes provide the space for the library to describe any known outcomes the services may have had on the patron. Again, in order to refrain from being invasive, staff must rely on a number of strategic methods to gather this information including the email survey, post-training surveys, and comments or conversations with patrons. These surveys are the best opportunity for the library to obtain non-numerical, open-ended, narrative information about how the services are affecting patron outcomes and impacts. Maximizing survey participation is key to maintaining these lines of communication.

Beyond this type of passive data gathering, obtaining real impacts concerning how the library contributed to the greater mission of the organization is challenging, especially in this type of government special library setting. In this investigation, no opportunity for this information to be transferred to management was observed. Such results would probably have to be sought out by explicitly learning from patrons how the

library helps them in their contributions to the organization. There may be opportunity for surrogates used in outcomes to be expanded upon. In cases where salary is known, time saved could possibly be extended further into money saved for the organization. The key to being able to work impacts into monthly statistics is to choose metrics that are easily obtained and easily recordable and to make sure those metrics are truly addressing areas of need.

As previously mentioned, the library survey can be a key contributor to producing the data useful in determining outcomes and impacts. Dudden (2008) suggests choosing open-ended questions for surveys asking users to pinpoint instances where services helped themselves and ultimately the greater organization. Structuring the questions carefully will allow managers to tease out details about the patron experience that would be impossible to gather through the many outputs retrieved. The questions in the survey were not included in the data collection because they are an ongoing form of reporting and not necessarily collected monthly by the library departments. However, it is possible some responses indicating impacts could have been included in the anecdotal sections. In this event, the library is probably aware of cases where they have succeeded in providing opportunities for patrons to positively impact the organization, which ultimately succeeds in fulfilling the mission of any special library.

Implications and Limitations

The research was conducted only on the metrics used by the EPA-RTP Library, a single sample in the large realm of government special libraries. Therefore its applicability and generalizability to other special libraries will be limited. This method addresses a small part of the greater picture of library value. By analyzing solely the state of the current metrics through the proposed model, inferences and conclusions will have to be drawn in order to contemplate future directions. Additionally, the process of communicating metrics is not examined in depth, as it requires an entire different set of research questions. However, some details of the study contribute to its generalizability. The coding is based on deductive application of categories derived from a theoretical framework, which can then be assessed numerically (Kohlbacher, 2006). In fact, the triangulation of quantitative and qualitative methods as has been proposed argues in favor of generalizability (Kohlbacher, 2006). This also supports the analysis's implementation in other contexts (Brewerton & Millward, 2001).

Choosing to analyze through these methods may appear far removed from a true indicator of value in a special library, the user. Though these metrics are often guided through user feedback, for the EPA-RTP Library, it is difficult to gather patron opinion due to the nature of services and relationship formality. The only consistent feedback from patrons is through a survey linked in every email exchange. The link is appended

to signatures in emails delivered solely to patrons within the organization and gaining volunteer survey participation can be challenging. As with regularly distributed surveys, responses are typically only warranted when an experience was either outstanding or problematic. Given these circumstances, this unobtrusive approach examining internal reporting methods was selected over other more invasive qualitative research methods.

Certain liberties were taken during the coding. For example, when applicable, various cataloging and acquisitions statistics were used as surrogates for input measures. Traditional inputs such as budget are not included in the statistics because of contractual rules between library staff and federal management. However, the governing body wished to know greater detail about the library's processes than just how many books were added to the collection. In this method, books added through multiple cataloging methods, through donations, and ways of acquiring serials are described. Also in the cataloging and interlibrary loan departments, figures are often recorded in the day-to-day operations in order to be used in the calculation of what is submitted to management. In an effort to be comprehensive, metrics like these along with some others, such as those not influencing patrons, were included in the "other reasons" category.

Once per year, a number of "hard" inputs are submitted to the EPA Library Network including total items in the physical collection, number of Full Time Equivalent (FTE) staff, and operating hours. This data was not included in this evaluation because the scope of this study involved monthly statistics, which are being collectively and continuously recorded by staff. These statistics are only addressed by the Library Director once per year and were thus omitted. Additionally after data collection, some new metrics were added to the library's evaluation procedures. Any changes will

ultimately not take place until the 2017 fiscal year. One example of these changes was the division of types of resources provided to distinguish journal articles from other non-EPA documents, such as links or citations.

Conclusion

The current study investigated the status of statistics recorded in the EPA-RTP Library. Metrics recorded by staff members and submitted to library management were evaluated based upon adherence to a model. Each metric was classified as either an input, process, output, outcome, or impact measure and the frequency for each category was analyzed. The library collects the most output measures, the easiest and least invasive statistic to record. Outcome measures, the most desirable metric, were collected but only by one of the management entities. In order to improve the state of metrics at the EPA-RTP Library, there needs to be a greater focus on noninvasive ways to gather information about outcomes and impacts rather than the current emphasis on quantitative outputs. By implementing more of these measures, the organization will be able to better understand how services influence patrons and more effectively communicate their value.

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